US009309682B2

(12) **United States Patent**
Hurst

(10) **Patent No.: US 9,309,682 B2**
(45) **Date of Patent: Apr. 12, 2016**

(54) **STRONG ARM BOLT-REBAR HANGER SYSTEM FOR CONCRETE FOOTING FORMS**

(71) Applicant: **Ralph Gerald Hurst**, Tehachapi, CA (US)

(72) Inventor: **Ralph Gerald Hurst**, Tehachapi, CA (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 48 days.

(21) Appl. No.: **13/694,912**

(22) Filed: **Jan. 19, 2013**

(65) **Prior Publication Data**

US 2014/0115996 A1 May 1, 2014

Related U.S. Application Data

(63) Continuation-in-part of application No. 12/932,173, filed on Feb. 19, 2011, now abandoned.

(51) **Int. Cl.**

E04G 21/18	(2006.01)
E04C 5/18	(2006.01)
E04C 5/16	(2006.01)

(52) **U.S. Cl.**

CPC ***E04G 21/185*** (2013.01); ***E04C 5/168*** (2013.01); ***E04C 5/18*** (2013.01)

(58) **Field of Classification Search**

CPC E04G 21/12; E04G 21/185; F16L 3/14; E04C 5/168; E04C 5/18

USPC 249/2, 3, 4, 5, 6, 7, 8, 34, 91, 93, 94, 249/96, 97; 52/699, 700, 701, 506.02, 508, 52/513, 712, 714; 211/119; D8/380

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

467,491	A *	1/1892	Anderson	52/489.1
D31,509	S *	9/1899	Heib	D8/380
1,329,362	A *	2/1920	Bowe	249/94
2,279,644	A *	4/1942	Spalding	52/506.03
2,503,648	A *	4/1950	Zeigler	211/119
3,084,892	A *	4/1963	Priestley et al.	248/61
4,136,784	A *	1/1979	Knobel et al.	211/119
D257,947	S *	1/1981	Reynoso	D8/373
4,765,108	A *	8/1988	Lapish	52/379
4,945,704	A *	8/1990	Brown, Jr.	52/706
4,957,259	A *	9/1990	Wolf, Jr.	248/304
5,042,218	A *	8/1991	Nasca et al.	52/677
5,174,083	A *	12/1992	Mussell	52/169.1
D337,510	S *	7/1993	Nasca	D8/354
5,388,804	A *	2/1995	Cohen et al.	249/210
5,607,124	A *	3/1997	Earley	248/48.2
5,640,822	A *	6/1997	Haswell	52/712
6,128,883	A *	10/2000	Hatzinikolas	52/698

(Continued)

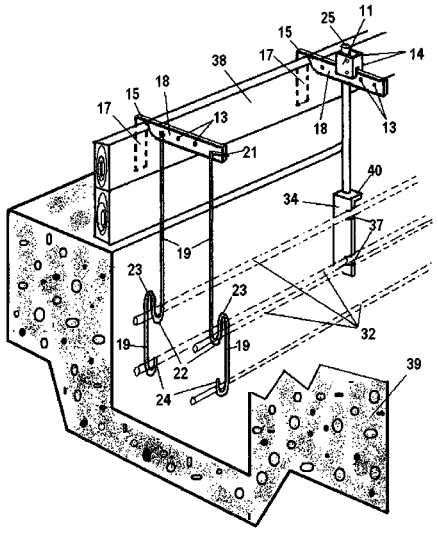
Primary Examiner — Michael Safavi

(74) *Attorney, Agent, or Firm* — MU Patents; Timothy Marc Shropshire

(57) **ABSTRACT**

An apparatus with multiple components to create a system capable of holding foundation bolts and foundation rebars prior to pouring concrete. The apparatus consists of [1] A ⅛ inch thick by one inch wide by ten inch length steel plate bent and twisted in a manner to hold both bolt and rebars. [2] A square steel tube one inch by one inch by one inch with ⅛ inch wide by ½ inch deep notch to be used in conjunction with above mentioned strong arm. [3] A ⅛ inch thick by one inch wide by seven inch length steel plate with the top portion bent over one inch with a ⅝ inch hole to accommodate a foundation bolt and two ⅝ inch notches to hold top and bottom rebar. [4] A ⅛ inch by 20 inch steel rod bent in a described manner to hang the top and bottom rebars from above described strong arm and independent of claim **2**. [5] A ⅛ inch by 6 inch steel rod bent in a described manner as to hold 2 foundation rebars independent of components 1 through 4.

1 Claim, 4 Drawing Sheets



(56) **References Cited**

U.S. PATENT DOCUMENTS

6,230,467	B1 *	5/2001	Leek	52/702
6,490,840	B1 *	12/2002	Thompson	52/715
6,510,666	B1 *	1/2003	Thompson	52/712
6,554,231	B2 *	4/2003	Choi	248/65
6,629,394	B1 *	10/2003	Trevino	52/677
6,811,130	B1 *	11/2004	Oh	248/343
D502,516	S *	3/2005	Chen	D21/694
7,959,125	B1 *	6/2011	Coleman	249/34
8,904,731	B2 *	12/2014	Hohmann et al.	52/714
8,915,384	B2 *	12/2014	Immerman et al.	211/119
2001/0030267	A1 *	10/2001	Caveney et al.	248/68.1
2006/0248843	A1 *	11/2006	Zapata et al.	52/687
2008/0116235	A1 *	5/2008	Zamzow	223/85
2010/0308182	A1 *	12/2010	Lahti	248/59
2011/0072751	A1 *	3/2011	Clear et al.	52/415

* cited by examiner

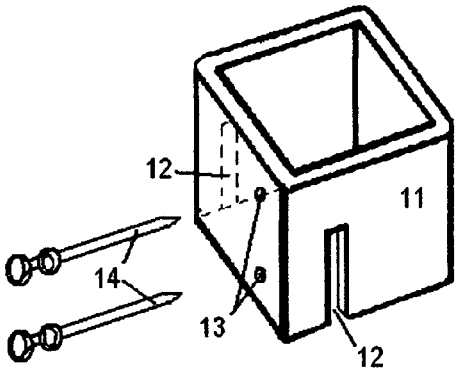


FIGURE 1

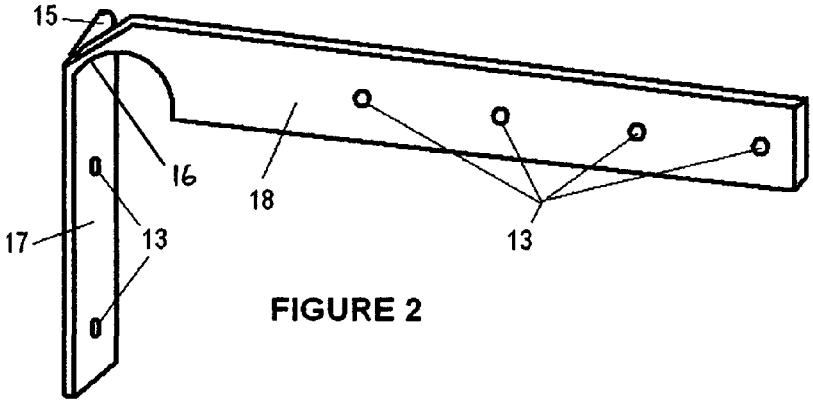


FIGURE 2

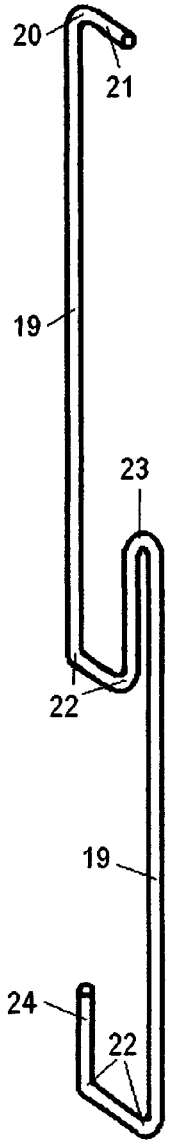


FIGURE 3

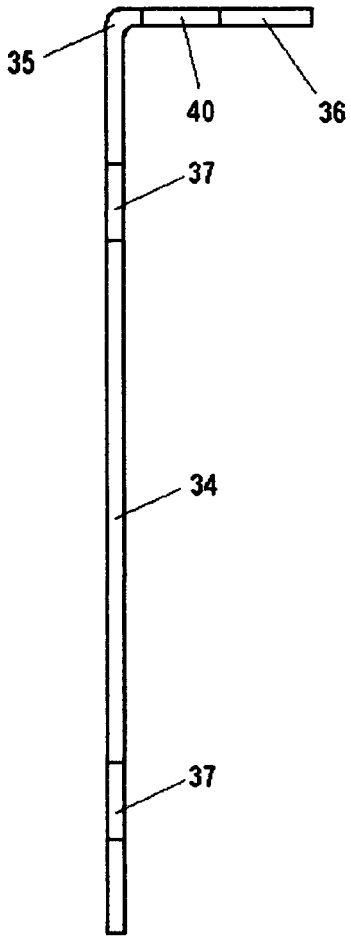


FIGURE 4

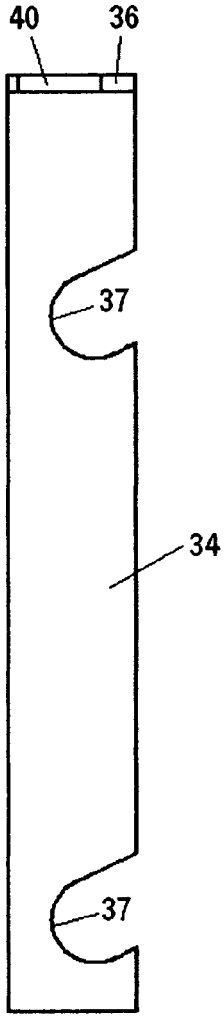


FIGURE 5

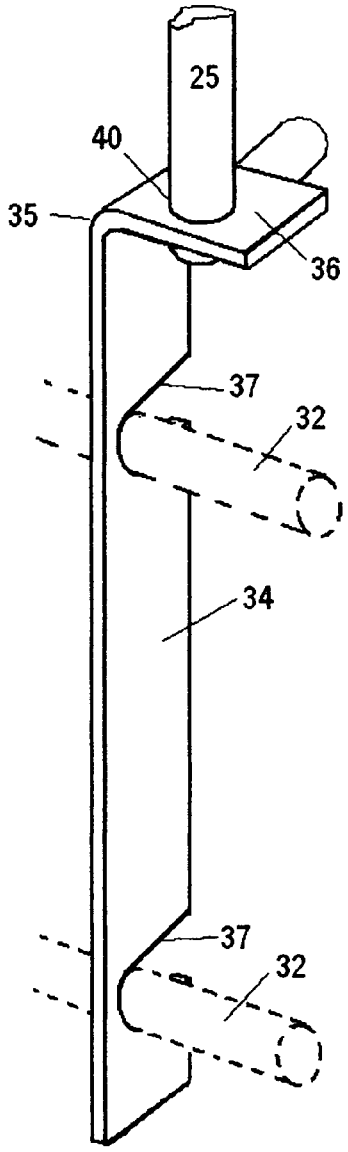


FIGURE 6

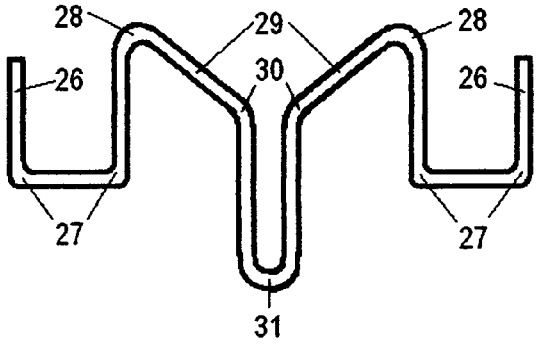


FIGURE 7

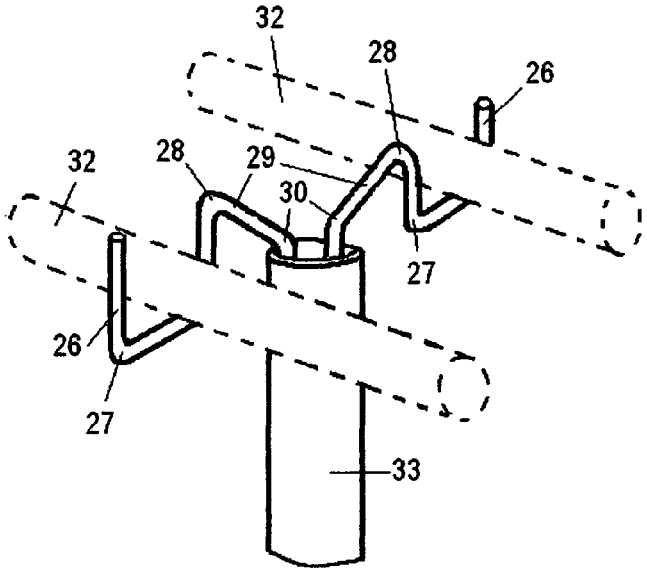


FIGURE 8

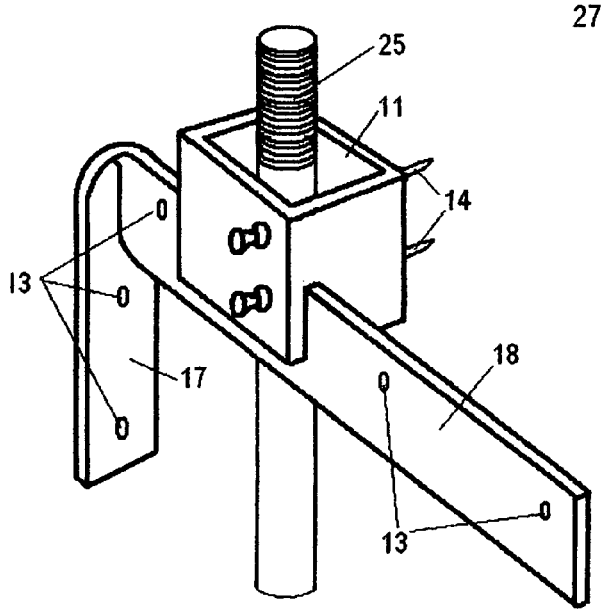


FIGURE 9

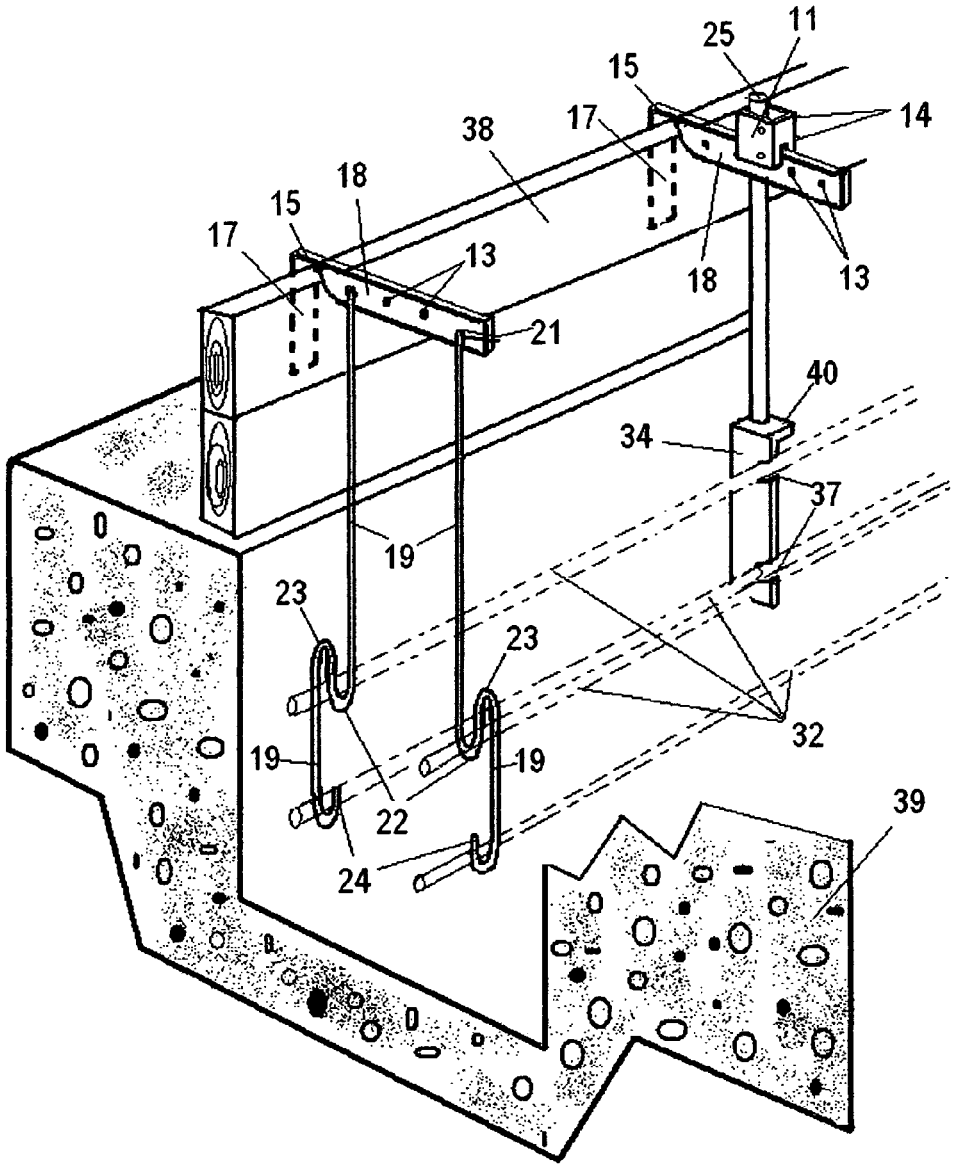

25
11
15
14
17
38
18
15
17
13
18
13
21
40
34
37
19
23
23
32
19
19
22
39
24

FIGURE 10

STRONG ARM BOLT-REBAR HANGER SYSTEM FOR CONCRETE FOOTING FORMS

CROSS REFERENCE TO RELATED APPLICATION

This application is a continuation in part of U.S. patent application Ser. No. 12/932,173 filed Feb. 19, 2011

FIELD OF THE INVENTION

The present invention relates to the construction of buildings with a typical exterior foundation known as footings. The invention creates a system for securing the foundation bolts and hangs the foundation steel bars known as rebars.

BACKGROUND OF THE INVENTION

For many years buildings used for homes or commercial use have been built in a manner that lacks structural integrity. In areas that are subject to earthquakes, tornadoes, and hurricanes, it is of utmost importance that the foundations are constructed with great strength.

In previous years foundation bolts were made of smaller diameter and shorter lengths and merely pressed down into wet concrete after it was poured. This resulted in small voids around the bolt which resulted in weaker structural strength.

It is of utmost importance that foundation bolts when placed in their required position stay without movement while the concrete is poured around them. New building codes require these bolts be placed in position prior to concrete being poured.

Building codes require that the foundation rebars be positioned in a manner that prevents them from coming in contact with earth. The current method for achieving this is to place the bottom rebar on cement blocks and hang the top rebars by tie wires to the forms or stakes above.

SUMMARY OF THE INVENTION

The object of the invention is to secure the foundation bolts in a manner to stay at an exact height and held in an exact distance from the edge of the slab. This invention system also hangs and secures as many as four foundation rebars in the required location in the footings by hanging from the metal strong arm.

BRIEF DESCRIPTION OF DRAWINGS

FIG. **1** is a perspective view of a square metal tube bracket in accordance with the present invention.

FIG. **2** is a full dimensional perspective view of a metal strong arm bracket in accordance with the present invention.

FIG. **3** is a perspective view of a rod shaped rebar holder of the present invention.

FIG. **4** is a side view of a metal plate rebar holder of the present invention.

FIG. **5** is a front view of a metal plate rebar holder of the present invention.

FIG. **6** is a perspective view of a metal plate rebar holder of FIG. **4** and FIG. **5** of the present invention

FIG. **7** is a front view of a rebar holder of the present invention used in conjunction with FIG. **8**.

FIG. **8** is a perspective view of the rebar holder of FIG. **7** of the present invention and how it is used.

FIG. **9** is a perspective view of a square metal tube bracket and a metal strong arm bracket of FIG. **1** and FIG. **2** of the present invention.

FIG. **10** is a perspective view of an assembled footing form using the multiple components of the present invention.

DETAILED DESCRIPTION

The following detailed description represents the best currently contemplated modes for carrying out the invention. The description is not to be taken in a limiting sense, but is made merely for the purpose of illustrating the general principles of the invention, a five component bolt and reinforcing bar system.

Referring to FIG. **1**, a component hereafter known as component A that works in conjunction with component B [FIG. **2**]. The square metal tube **11** is a one inch by one inch by one inch long tube with a ⅛ inch wall thickness. This tube has a one inch wide by ½ inch deep notch. **12** on both sides by the side wall, this leaves a ⅝ inch clearance to allow a ⅝ inch bolt to pass through. On the opposite side walls it has two ⅛ inch holes **13** at the top and bottom to receive two keeper pins **14**. The ⅛ inch notches **12** of the metal tube **11** slips over the horizontal bar of the metal strong arm **18**. The bottom pin hole **13** is aligned with the pin hole **13** in the metal strong arm **18** to lock it in place with the keeper pin **14**. The foundation bolt **25** is then placed up through the tube **11** [see FIG. **9**].

Referring to FIG. **2**, known as component B. This is a ⅛ inch thick by one inch wide by 11 inch long flat metal plate with a 4 inch vertical portion **17** then bent at 90 degree **15** with a full twist **16** to create the horizontal portion of the strong arm This seven inch long arm has four ⅛ inch pin holes **13**. The vertical portion **17** is designed to nail to the side of a wooden form board [see FIG. **10**]. This component is designed to work independently of the metal tube **11** to support the third component known as component C, a ⅛ inch steel rod shaped to support two reinforcing bars **32** [see FIGS. **3** & **10**].

Referring to FIG. **3**, component C, a ⅛ inch by 21 inch steel rod shaped as follows, a ½ inch long horizontal portion **21** then bent 95 degrees downward **20** to create a vertical member **19** eleven inches long, bent again at 90 degrees **22** to create a ⅝ inch wide horizontal portion, then bent upwards 90 degrees **22** for one inch vertical, then bent downward 180 degrees **23** to a vertical portion six inches long **19** then again bent 90 degrees **22** for a ⅝ inch horizontal portion then 90 degrees upward **22** for a one inch vertical arm **24**. This component is designed to accommodate holding a top and bottom reinforcing bar **32** [see FIG. **10**], and to hang from strong arm **18** by slipping horizontal portion **21** through pin holes **13** [FIG. **2**].

Referring to FIGS. **4** & **5**, describes a side elevation and a front elevation of the fourth component of the strong arm bolt and rebar system, Component D. This component is a ⅛ inch thick by one inch wide by seven inch long flat metal plate. Looking at the side elevation, [FIG. **4**] a horizontal length one inch **36** with a ⅝ inch hole **40** bent at 90 degrees downward **35** to create a six inch vertical member **34**. This vertical member **34** has a ⅝ inch wide elongated downward notch **37** at the top and bottom portion to hold a top and bottom reinforcing bars **32** [see FIGS. **6** & **10**].

Referring to FIG. **6**, this describes a full dimensional view of FIGS. **4** & **5** and how this component is designed to be used. The horizontal member **36** with it's ⅝ inch hole **40** is placed on a ⅝ inch by 12 inch foundation bolt **25** which is supported by the strong arm components of FIGS. **1** & **2** [see FIG. **9**]. The two downward ⅝ inch elongated notches sup-

port the top and bottom reinforcing bars **32** see FIG. **6**. This bolt and rebar system is accomplished by the three components of FIGS. **1**, **2**, & **4** [see FIG. **10**].

Referring to FIG. **7**, this is a fifth component of the rebar system designed to be used in footings where no wooden forms can be used to hang the reinforcement bars with the use of the strong arm **18** of FIGS. **2** & **3**. It is a 3/16 by 10 inch steel rod bent as described. A ¾ inch vertical arm **26** then bent 90 degrees **27** with a ¾ inch long horizontal arm, then bent 90 degrees upward **27** for a ¾ inch vertical arm, then bent 120 degrees downward **28** for a one and ½ inch arm **29**, then again bent downward at 45 degrees **30** for one inch, then 180 degree bend upward **31** for one inch vertically, then again bent upward 45 degrees **30** for one and ½/inches **29** to a 120 degree downward bend **28** for a ¾ inch vertical arm, again bent 90 degrees **27** for ¾ inch horizontal, then bent again upward 90 degrees **27** to a ¾ vertical arm **26**.

Referring to FIG. **8**, this is a full dimensional view describing the use of a fifth component [FIG. **7**]. This describes the devise in use supporting two foundation reinforcing bars **32** with the use of a hollow pipe **33** driven down in the center of a footing. The portion of the devise **31** is placed down into the pipe to support both side arms **29** bent outward from the bends **30** and **30**.

Referring to FIG. **9**, this is a full dimensional view of the first two components A & B used over a typical exterior footing where they can be attached to a wooden form **38** [see FIG. **10**].

Referring to FIG. **10**, this is a full dimensional view of an exterior footing and all of the components used in conjunction with a wooden form board **38**.

I claim:

1. A form assembly comprising a stabilizing apparatus for securing a foundation anchor bolt in a fixed position prior to pouring concrete; the stabilizing apparatus comprising a one inch square metal tube one inch in length with a wall thickness of ⅛ inch, a ⅛ inch wide by ½ inch deep channel cut along at least a first side wall, leaving a ⅝ inch distance from the channel to an end of the first side wall; second and third sidewalls lying perpendicular to the first sidewall each having two ⅛ inch keeper pin holes there through, the holes of each of the second and third side walls lying one above another, with the ⅛ inch wide by ½ inch deep channel fitting into a ⅛ inch wide by a one inch height steel strong arm of a ⅛ inch thick by one inch wide by 11 inch long steel plate; said plate bent at 90 degrees creating a four inch vertical member and a seven inch horizontal arm with the seven inch horizontal arm bent at a 90 degree twist to create said ⅛ inch wide by a one inch height strong arm capable of holding four reinforcing bars with the four inch vertical member having two ⅛ inch nail holes for attaching to a wooden form board and with the seven inch horizontal arm having four ⅛ inch holes to receive keeper pins; and a ⅛ inch by 21 inch long steel rod with bends designed to hook to said strong arm, said rod having two ⅝ inch cradles to hold one upper and one lower foundation reinforcing bars.

* * * * *